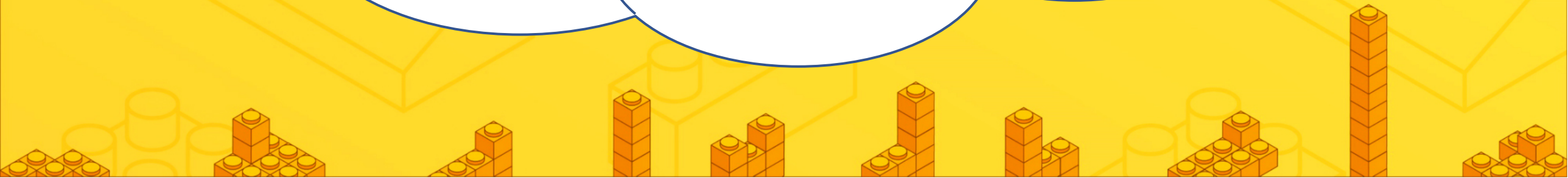




# Protecting Communication Security

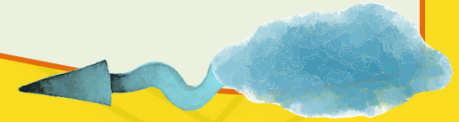


## Target

- **Learn the rules of Task 4: Safeguarding Communication Security.**
- **Based on previous lessons, use functions like precise movement, color detection, variables, and LED lights to complete Task 4.**



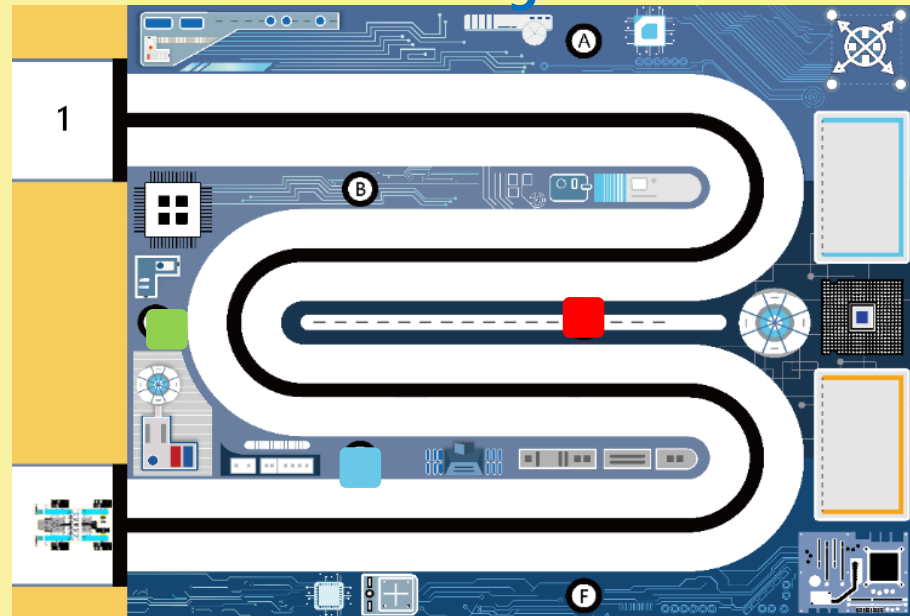
# 01 Task





# Task

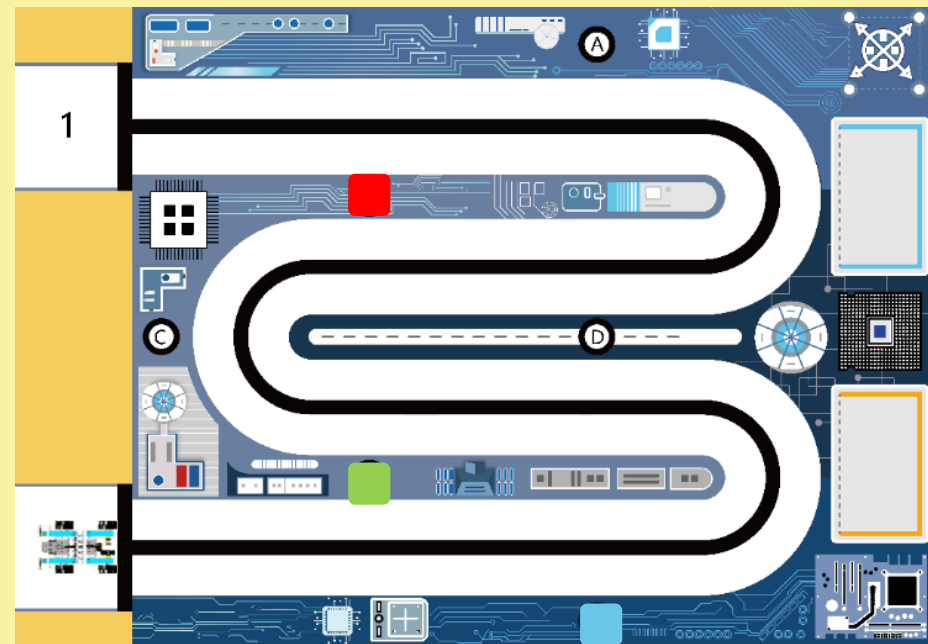
- The smart device starts from the yellow preparation area, identifies the random color blocks on the ABCDEF markers, and then returns to the yellow preparation area, lighting up the corresponding colors in order based on the identified colors.
- Before the competition debugging, 2 to 4 blocks will be randomly placed on the ABCDEF markers. After debugging, a draw will be conducted for the blocks, and the colors will be red, green, yellow, and blue.
- The picture below shows one random arrangement mode.





# Task

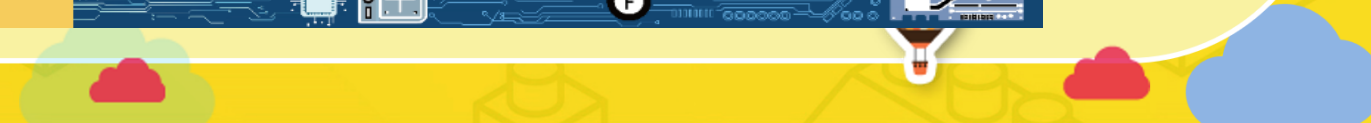
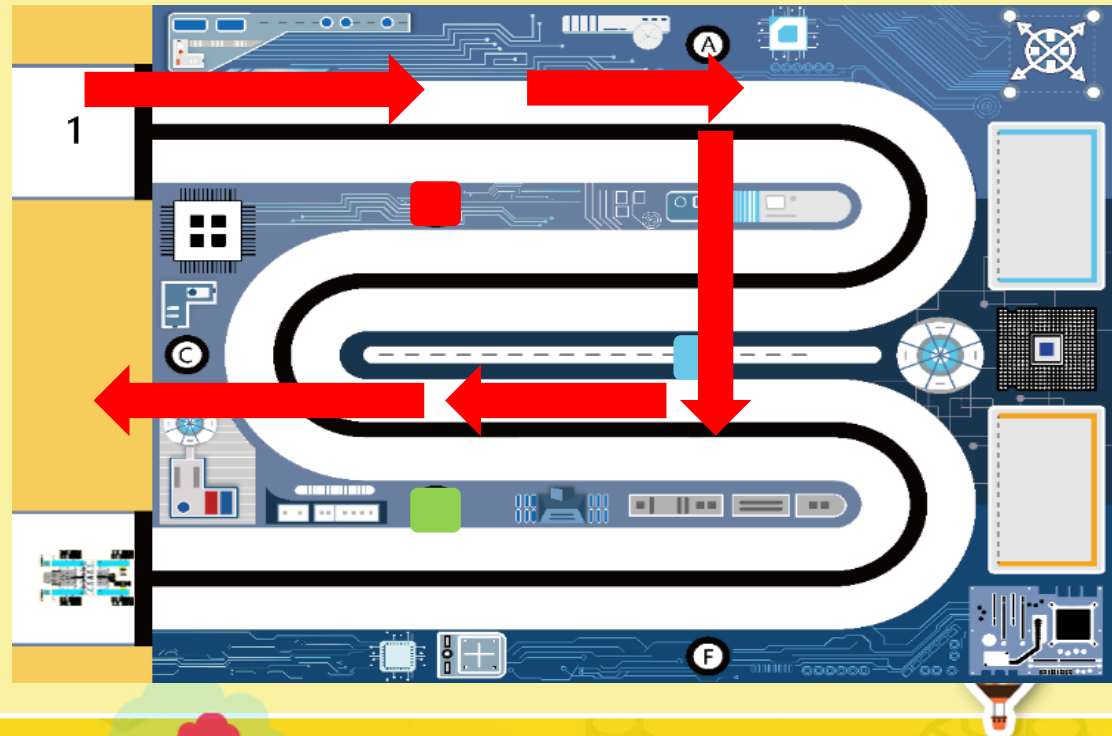
- According to the rules and requirements, we can set three relatively distant block positions and attempt to complete the task, as shown in the diagram below.





# Task

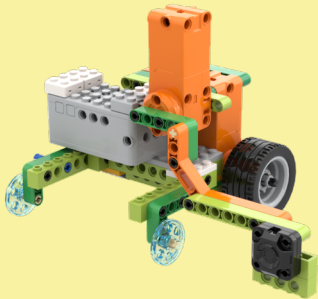
- **Route Design:** Move forward to detect the first color block, move forward a fixed distance, turn 90 degrees to the right, move forward to detect the second color block, move forward a fixed distance, turn 90 degrees to the right, move forward to detect the third color block, move forward to return to the preparation area, and light up the LEDs.



# Task Segmentation 1

## • Task Flow

1、Put down the robotic arm



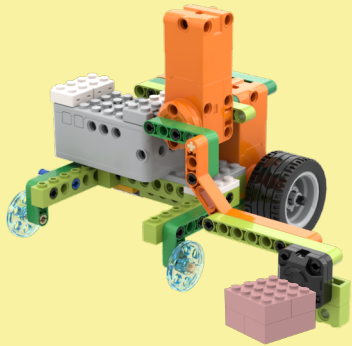
```
when clicked
  set a to 0
  set b to 0
  set c to 0
  set 3# ext servo to rotate absolute angle 95 (0~359) degrees clockwise at 30 (0~100)% power
  wait 0.1 seconds
  wait until 3# ext servo done
  set all traffic lights to closed
  wait 0.1 seconds
```



# Task Segmentation 2

- Task Flow

## 2、Detecte the color



```
define forward
  set 1# ext servo to keep running at 30 (-100~100)% speed on anticlockwise
  set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
  wait until 1# color sensor's color code < 50
  wait 0.3 seconds
  stop all ext servo(s)
  wait 0.3 seconds
```

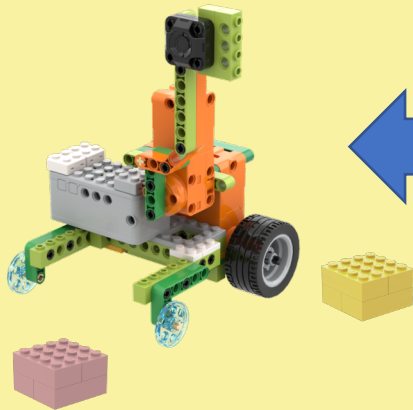
```
forward
  set a to 1# color sensor's color code
  wait 0.5 seconds
```



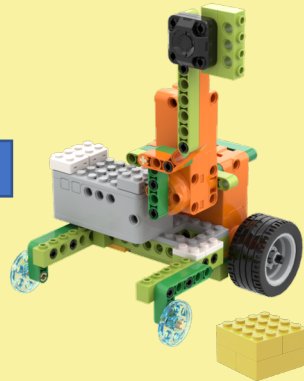
# Task Segmentation 3

## • Task Flow

4、Go a little further



3、Raise the robot arm



```
define arm
  set 3# ext servo to rotate absolute angle 0 (0~359) degrees anticlockwise at 30 (0~100)% power
  wait 0.1 seconds
  wait until 3# ext servo done
  set 1# ext servo to keep running at 30 (-100~100)% speed on anticlockwise
  set 2# ext servo to keep running at 30 (-100~100)% speed on clockwise
  wait 0.5 seconds
  stop all ext servo(s)
  set 3# ext servo to rotate absolute angle 94 (0~359) degrees clockwise at 30 (0~100)% power
  wait 0.1 seconds
  wait until 3# ext servo done
  wait 0.3 seconds
```

